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CVI. *An Account of Mr. Samuel Tull's
Method of castrating Fish. Communicated
by W. Watfon, F. R. S.*

To the Royal Society.

Gentlemen,

Read Dec. 19, 1754. **S**everal years since, Mr. Tull of Ed-
monton performed the operation of
castrating fishes, before Sir Hans Sloane, Bart. and
several members of the Royal Society, who met at
Sir Hans's house for that purpose. About five or
six years ago he performed the same operation in
presence of our late worthy President Mr. Folkes,
myself, and several others. Among these was a very
valuable member of this Society, Mr. Trembley,
who is with the Duke of Richmond on his travels,
and is now at Feltzberg in Austria, at a country-seat
of the Prince of Lichtenstein. This nobleman, who
is a great lover of natural history, as well as a zeal-
ous promoter of useful knowlege, is very curious in
whatever relates to the history of fishes; and being
informed by Mr. Trembley, that he had seen fishes
castrated in England, and of the advantages which
he had been assured did result from it, his highness
intreated him to procure him from hence the most
exact account of the manner of performing this ope-
ration, and of several particulars relating thereto.

Mr. Trembley accordingly wrote me a letter, de-
siring me, if possible, to transmit to him this in-
formation. In consequence of which, I wrote to Mr.

Tull, who in a few days was so obliging as to answer my letter, and to send me what I had requested of him, and which I accordingly have transmitted to Mr. Trembley, for the Prince of Lichtenstein. But as nothing of this sort has been communicated to the Royal Society, as a body, I thought it not improper to lay before you Mr. Tull's account of his operation; that, if it be thought worthy, it might be recorded in the journals and register-books of the Society.

In England, where in many parts sea-fish are in great plenty, the fish of rivers and ponds are less esteemed; and improvements, either with regard to their bulk or increase, are less attended to: but in Germany, remote from the sea, where pond-fish are a great article of traffic, Mr. Tull's method may be of great use.

Mr. Tull informs me, that he castrates both the male and female fish; and that, although almost any time is proper for the operation, the least so is just after they have spawned, as the fish then are too weak and languid to bear, with success, so severe an operation. The most eligible time however is when the ovaries of the female have their *ova* in them, and when the vessels of the male, analogous to these, have their seminal matter in them; inasmuch as at this time these vessels are more easily distinguished from the ureters, which convey the urine from the kidneys into the bladder and are situate near the seminal vessels on each side of the spine. These may, without sufficient attention, be taken for the ovaries; and the more so, when these last are empty. When fishes have spawned a few weeks,

weeks, they are fit for the operation; for, like hens, they have small eggs in their ovaries as soon as they have laid their former clutch of eggs.

When a fish is intended to be castrated, it must be held in a wet cloth, with its belly upwards; then with a sharp pen-knife, with its point bent backwards, or other well-adapted instrument, the operator cuts through the integuments of the rim of the belly, and in doing this he carefully avoids wounding any of the intestines. As soon as a small aperture is made, he carefully inserts a hooked pen-knife, and with this he dilates this aperture from between the two fore-fins, almost to the anus. From the back of this instrument, being blunt, the danger of wounding the intestines is avoided. He then, with two small blunt silver hooks, of five or six inches long, and of the * form hereunder described, by the help of an assistant, holds open the belly of the fish; and, with a spoon or spatula, removes carefully the intestines from one side. When these are removed, you see the ureter, a small vessel, nearly in the direction of the spine; and at the same time the ovary, a larger vessel, lying before it, that is, nearer the integuments of the belly. This last vessel you take up with a hook of the same kind with those before-mentioned, and detaching it from the side far enough for the purpose, divide † it transversely with a pair of sharp scissors; remem-

* 

† Mr. Tull has frequently, to prevent the re-union of the divided ovaries, by which the effect of the operation might be defeated, taken out part of them, and nevertheless the fish have survived.

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bering always, that great care is taken in not wounding, or otherwise injuring, the intestines.

After one of the ovaries has been divided, proceed in the like manner to divide the other; and then sew up the divided integuments of the belly with silk, inserting the stitches at a very small distance one from the other.

Mr. Tull first put this method into practice, in order to prevent the excessive increase of fish in some of his ponds, where the numbers did not permit any of them to grow to an advantageous size. But from castration the increase was not only prevented, but the castrate fish, as Mr. Tull asserts, grew much larger than their usual size, were more fat, and, which is no trifling consideration, were always in season.

He observes further, that the spawning-time is very various: that trouts, for instance, are full about Christmas; perch in February; pikes in March; and carp and tench in May. You must always, however, make some allowance for climate and situation, with regard to the spawning of fish. And, from a very diligent attention, he assures me, that he has been able to settle a point much controverted by naturalists, in relation to the copulation of fishes. The most generally received opinion has been, that they did not copulate; but that the female did cast her spawn in the water, and that then it was fecundated by the spermatic matter of the male. Mr. Tull, in contradiction to this hypothesis, asserts, that he has frequently seen fishes in actual copulation; and that this is generally done before the ova arrive at maturity.

After Mr. Tull has castrated his fish, they are put into the water where they are intended to continue. He makes no particular appropriation, neither with regard to the ponds into which they are put, nor does he give them any particular nourishment; but they take their chance in common with other fish, as though they were not castrated. And he informs me further, that if tolerable care is taken, very few fish die of the operation, when performed in the manner here described; though heretofore, when, instead of the belly, he made the opening in the sides of the fish, numbers died, from his wounding the intestines, and frequently dividing the ureters.

I am, with all possible respect,

Gentlemen,

London, Dec.
11, 1754.

Your most obedient humble servant,

William Watson.